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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte QIWEI HE,
and Michael G. Harwell

Appeal 2011-005552
Application 10/779,492
Technology Center 1700

Before TERRY J. OWENS, CATHERINE Q. TIMM, and
MARK NAGUMO, and *Administrative Patent Judges*.

Opinion for the Board filed by *Administrative Patent Judge* Nagumo.

Opinion Dissenting filed by *Administrative Patent Judge* Timm.

NAGUMO, *Administrative Patent Judge*.

DECISION ON APPEAL[1]

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[1] Certain issues in this appeal are closely related to issues in the Appeal 2010-003736, which we also decide today.

A. Introduction[2]

Qiwei He and Michael G. Harwell ("He") timely appeal under 35 U.S.C. § 134(a) from the final rejection[3] of claims 1-4, 6-9, 11-14, 16, and 17, which are all of the pending claims. We have jurisdiction. 35 U.S.C. § 6. We REVERSE.

The subject matter on appeal relates to hot melt adhesives said to be useful as "elastic attachment adhesives." The 492 Specification teaches that adhesives suitable for attachment to elastic substrates "exhibit good creep performance when used as an elastic attachment adhesive in the manufacture of articles comprising an elastic region." (Spec. 2, 1st full para.) A measure of creep performance is provided by the "% creep," which is defined as the difference between the starting length and the final length, relative to the starting length, of an elastic filament adhered initially in the stretched condition between two nonwoven sheets, that is then allowed to relax for a 4-hour period at 100°F. (*Id.* at 12, last para.) An average % creep of 4.8 % is said to be "good." (*Id.* at 13, Table 1 [the working example].) The 492 Specification also indicates that elastic attachment adhesives have a viscosity at 300°F (approximately 150°C) of about 6000 centipoise ("cP"). (*Id.*; Br. 6.) Good creep performance is said to require an adhesive with excellent toughness. (Spec. at 3, 3d para.)

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[2] Application 10/779,492, *Adhesive Containing Radial Block Copolymer*, filed 13 February 2004. The specification is referred to as the "492 Specification," and is cited as "Spec." The real party in interest is listed as Henkel AG & Co., KGaA ("Henkel") (Appeal Brief, filed 16 August 2010 ("Br."), 1.)

[3] Office action mailed 15 March 2010.

Claim 17 is representative and reads:

17. A hot melt adhesive comprising

from *about 3 wt % to less than 15 wt % of a radial block copolymer component* comprising $(PS\text{-}PI)_nX$ wherein PS is polystyrene and PI is polyisoprene, X is the residue of a multifunctional coupling agent used in the production of the radial block copolymer, and n is equal to or greater than 3 and represents the number of PS-PI arms appended to X, and wherein the styrene content of the radial block copolymer is from 25 wt % to about 50 wt %

from about 1 wt % to about 20 wt % of a linear triblock copolymer,

from about 30 wt % to about 70 wt % of a tackifying resin, and

about 10 wt % to about 20 wt % of a liquid plasticizer,

said adhesive being suitable for use as an elastic attachment adhesive.

(Claims App., Br. 9; indentation, paragraphing, and emphasis added.)

The Examiner has maintained the following ground of rejection:[4]

Claims 1-4, 6-9, 11-14, 16, and 17 stand rejected under 35 U.S.C. § 103(a) in view of the combined teachings of Kueppers[5] and Diehl.[6]

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[4] Examiner's Answer mailed 5 November 2010 ("Ans.").

[5] Michelle C. Kueppers, *Low Application Temperature Hot Melt with Excellent Heat and Cold Resistance*, U.S. Patent 5,939,483 (1999).

[6] Charles F. Diehl et al., *Radial Block Copolymers Containing Butadiene Endblock*, U.S. Patent 5,292,819 (1994).

B. Discussion

Findings of fact throughout this Opinion are supported by a preponderance of the evidence of record.

He identifies related appeals in two applications,[7] which also were filed on 13 February 2004, by the same inventors, and assigned to Henkel. The appeal in 10/779,420[8] was mooted by allowance after the appeal brief was filed. We decide Appeal 2010-003736 in application 10/779,505 today in view of a closely related issue regarding prior art reference Kueppers.

The claims of the three applications are directed towards elastic attachment adhesives. The main difference is the identity and the amount of the radial block copolymer, as summarized in the following table:

Application	radial block	relative amount
420	$(PS\text{-}PI\text{-}PB)_nX$	< 15 wt %
492	$(PS\text{-}PI)_nX$	< 15 wt %
505	$(PS\text{-}PI\text{-}PB)_nX$	~(15 - 35) wt %

where PS is polystyrene, PI is polyisoprene, and PB is polybutadiene.

In the present appeal of rejections in the 492 Application, although He presents arguments for the patentability of claims 1 and 17 under separate headings (Br. 3 and 6, respectively), those arguments are not substantively distinct. Moreover, the Examiner has not treated the claims separately. Thus, we need consider only the limitations of claim 17.

[7] Related Proceedings App., Br. 13.

[8] U.S. Patent 7,655,720 B2, issued 2 February 2010.

This appeal is resolved by deciding two major disputes between the Examiner and He:

> (1) Would one of ordinary skill in the art have combined the teachings of Kueppers with those of Diehl, as argued by the Examiner?
>
> (2) Is the limitation, "suitable for use as an elastic attachment adhesive," entitled to significant weight as defining a property or properties of the claimed adhesive?

The Examiner argues that because Kueppers discloses adhesives comprising ranges of components that overlap the ranges of the same components recited in the rejected claims, adhesive compositions within those ranges would have been prima facie obvious. (Ans. 4, last para.) Indeed, the Examiner finds that the only difference between the claimed invention and Kueppers is the absence of any anticipatory examples. (*Id.*) In this regard, the Examiner argues that the recitation of use as an "elastic attachment adhesive" is merely a statement of intended use that is not entitled to patentable weight because no structural difference arises between the claimed invention and the prior art. (*Id.* at 5, first para.) The Examiner maintains that the adhesive shown in Kueppers is suitable for use as an elastic attachment adhesive, and notes that the intended use of the adhesives discussed by Kueppers is in packaging applications. (*Id.*) The Examiner concludes that persons having ordinary skill in the art would have concluded that the adhesives useful in packaging applications could also be used in diaper and elastic applications. (*Id.*) The Examiner also cites Diehl as showing similar adhesive compositions that are disclosed as being useful in

diaper applications, packaging and carton sealing. (*Id.*, 2d para.) The Examiner argues that this teaching would have provided persons having ordinary skill in the art with "a clear understanding that adhesives useful in packaging applications can be used in diaper and elastic attachment as well." (*Id.*) This would have, in the Examiner's view, provided motivation "to select the adhesive compositions in Kueppers for elastic attachment applications as shown in Diehl, given the art recognized properties that make these adhesives suitable for both packaging and elastic attachment as evidenced by the disclosure in Diehl." (*Id.*)

He responds that Kueppers seeks fast-setting adhesives that can be applied at relatively low temperatures, and that Kueppers teaches adhesives having viscosities less than 5000 cP, most preferably less than 1000 cP at 155°C. (Br. 4, 3d full para.) According to He, Kueppers does not suggest adhesives that would be useful with elastic materials. (*Id.*, last para.) Moreover, He argues that adhesives useful as elastic attachment adhesives have much higher viscosities, such as 6000 cP, and average creep % of 4.8%, as exhibited by the example reported in Table 1 of the 492 Specification. (*Id.* at 6, 1st full para.) According to He, nothing in Kueppers suggests that mere manipulation of the viscosity would result in adhesives useful as elastic attachment adhesives. (*Id.* at para. bridging 4-5.)

In this regard, He argues further that the Examiner overlooked Kuepper's teachings that Diehl is directed to adhesive compositions that are distinct from those sought by Kueppers. (Br. 5, 2d full para.) More particularly, where Kueppers seeks fast setting non-pressure sensitive hot melt adhesives (*id.*, *citing* Kueppers col. 8, ll. 7-14), Diehl seeks slow setting

pressure sensitive adhesives that are characterized as having an indefinite open time. According to Kueppers, the adhesives taught by Diehl also lack the heat resistance that is a characteristic of the packaging adhesives sought by Kueppers. (Br. 5, 2d para, citing Kueppers col. 2, ll. 45-52.) The distinct properties of the adhesives taught by Kueppers and by Diehl would not, in He's view, have provided the motivation or suggestion to modify Kuepper's adhesive to be suitable for use as an elastic attachment adhesive. (*Id.*)

The Examiner responds that "[t]here is no reason to understand that the adhesive of Kueppers is not 'suitable for use as an elastic attachment adhesive.'" (Ans. 6, ll. 2-3, quoting claim 1.) As for the alleged disparity in viscosities, the Examiner argues that, implicit in the disclosure that low viscosities may be selected, is the teaching that viscosity manipulation is well known and within the skill of the art to arrive at optimum proportions of components to provide the desired properties. (*Id.*, last para.)

The Examiner relies on Diehl as evidence that the ordinary adhesives formulator would have recognized that the variation of properties such as viscosity, and the suitability of adhesives for use with elastic substrates, would have been obvious for the class of adhesives comprising radial block copolymers, linear block copolymers, tackifiers, and plasticizers. But, as He points out, the adhesives sought by Kueppers are different from those sought by Diehl. In particular, Kueppers is concerned with non-pressure sensitive adhesives, which have, as discussed *supra*, distinct properties, including viscosities and setting times, from the pressure sensitive adhesives of concern to Diehl. Thus, the weight of the evidence is that a person having ordinary skill in the art would not have looked to Diehl when considering

ways to modify Kueppers. Similarly, such a person would not have looked to Diehl to select particular ranges of components to obtain particular properties when modifying the adhesive compositions taught by Kueppers. Therefore, to the extent the Examiner relies on Diehl for evidence that it would have been obvious to transfer alleged teachings of Diehl to adhesive compositions described by Kueppers, the Examiner's rationale fails.

The Examiner's arguments appear to be based on the assumption that the recitation of ranges of components provides a complete description of the claimed adhesive composition, and that the further recitation of properties is superfluous. Kueppers and Diehl, however, indicate that the Examiner's assumption is faulty. Taken together, Kueppers and Diehl show that a variety of adhesives having distinct properties may be compounded from overlapping amounts of similar ingredients, including radial block copolymers, tackifying resins, plasticizers, and linear block copolymers.[9] This is particularly true where Kueppers describes the presence of wax as a component necessarily present at 10-40 wt% (Kueppers, abstract, and col. 6,

[9] We note that, contrary to He's arguments (Br. 5, 3d full para.) that Diehl does not disclose the presence of linear triblock copolymers in the adhesives, Examples 1-4 disclose the presence of a polystyrene-polydiene "diblock" copolymer in addition to the radial block copolymers. The "diblock" copolymers are "arms" of the radial block copolymers that did not couple to the $SiCl_4$ coupling agent. (Diehl col. 10, ll. 3-14.) The "diblock" label is mildly misleading, but the block copolymers are made by sequential anionic polymerization of styrene, isoprene, and butadiene (*id.* at col. 9, ll. 52-63), followed by addition of the $SiCl_4$ (*Id.* at l. 63-67 to col. 10, l. 2). Hence, it is clear that linear triblocks are formed and present in the adhesives described by Diehl.

ll. 16-65), and where Diehl limits waxes to from 0 to about 5 wt% (Diehl col. 15, ll. 51-62).

The Examiner's challenge to the functional limitation regarding the suitability of the claimed adhesive as an elastic attachment adhesive has taken the form of merely denying that the recited function is entitled to patentable significance because all compositions within the recited ranges of components are suitable for that purpose. Kueppers, however, seeks to provide a low application temperature hot melt adhesive that exhibits excellent heat and cold resistance. (Kueppers col. 1, ll. 10-13.) According to Kueppers, "[t]he substrates to be bonded include virgin and recycled kraft, high and low density kraft, chipboard, and various types of treated and coated kraft and chipboard." (*Id.* at ll. 18-22.) Moreover, Kueppers teaches that the hot melt adhesive must exhibit full fiber tearing bonds.
In Kuepper's words, "[t]his means that all the fiber must be removed from the substrate along the entire length of the adhesive bead when the bond is separated by hand." (*Id.* at ll. 23-25.) Neither the rigid and nonelastic substrates for which Kueppers provides adhesives, nor the adhesive properties described by Kueppers as being suitable for bonding such substrates, suggest, on their face, that such adhesives have properties that would make them useful for bonding elastic substrates. Nor has the Examiner come forward with any credible evidence or argument that persons skilled in the art would have considered Kuepper's adhesives to be useful for such purposes.

Functional limitations are often problematic for inventors because, as the predecessor to our reviewing court explained, "[b]y its own literal terms

a claim employing such language covers any and all embodiments which perform the recited function." *In re Swinehart*, 439 F.2d 210, 213 (CCPA 1971). In the present case, however, the Examiner has failed to show that, more likely than not, the adhesives taught by Kueppers have properties that would have commended them to persons having ordinary skill in the art as elastic attachment adhesives. Moreover, the Examiner has failed to show that Diehl would have provided any reasonable expectation of modifying compositions described by Kueppers such that they would have been useful in that way.

C. Order

We REVERSE the rejection of claims 1-4, 6-9, 11-14, 16, and 17 under 35 U.S.C. § 103(a) in view of the combined teachings of Kueppers and Diehl.

REVERSED

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TIMM, *Administrative Patent Judge*.

I respectfully dissent from the decision of my colleagues for the following reasons.

As a first matter, I agree with the Examiner that the limitation "said adhesive being suitable for use as an elastic attachment adhesive" is in the nature of an intended use limitation. The Examiner has correctly applied the law to this limitation. As stated by the Examiner, "[i]t is well established that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art." (Ans. 5-6.) *See In re Hack*, 245 F.2d 246, 248 (CCPA 1957) ("These cases are merely expressive of the principle that the grant of a patent on a composition or machine cannot be predicated on a new use of that machine or composition.").

Appellants provide no particular definition in the Specification for an adhesive suitable for use as an "elastic attachment device." The Specification measures the suitability of the adhesive for this use by measuring creep performance, but the claim is not limited to any particular creep performance (Spec. 12-13). Therefore, in order to avoid unduly reading limitations into the claim, I would interpret the claim as encompassing adhesives having the flexibility to allow at least some creep such that the adhesive is capable of attaching an elastic material.

It is axiomatic that during examination proceedings, claims are given their broadest reasonable interpretation consistent with the specification. *In*

re Am. Acad. of Sci. Tech. Ctr., 367 F.3d 1359, 1364 (Fed. Cir. 2004). Although claims are to be interpreted in light of the specification, limitations from the specification are not to be read into the claims. *See In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993). An applicant seeking a narrower construction must either show why the broader construction is unreasonable or amend the claim to expressly state the scope intended. *In re Morris*, 127 F.3d 1048, 1057 (Fed. Cir. 1997).

The Examiner has established that Kueppers describes hot melt adhesives having the claimed components in amounts overlapping or within the claimed ranges (Ans. 4). In fact, except for the radial block copolymer, Kueppers describes preferences for using concentrations within the claimed ranges for all the claimed components (Kueppers, col. 5, ll. 26-50; col. 6, ll. 9-14; col. 7, ll. 15-37). Moreover, the most preferred concentration of the radial block copolymer is about 10% to about 20% by weight, which not only substantially overlaps the claimed amount of less than 15 wt%, but includes the higher amounts of 15-20 wt%, which are amounts that would be expected to increase the cold temperature flexibility of the adhesive (Kueppers, col. 4, ll. 25-65 and col. 8, ll. 47-56).

It is reasonable to conclude, based on the similarity of Kueppers' compositions to those encompassed by the claim, that the adhesives of Kueppers would be elastic enough to be "suitable for use as an elastic attachment adhesive" within the broad but reasonable meaning of the claim. Based upon this reasonable conclusion, the burden should shift to Appellants to show that Kueppers' adhesives, in fact, do not have the required properties to allow them to be suitable as an elastic attachment device.

For the above reasons, I would sustain the Examiner's rejection of claims 1-4, 6-9, 11-14, 16, and 17 under 35 U.S.C. § 103(a) as unpatentable over Kueppers in view of Diehl.[10]

[10] A discussion of Diehl is not necessary.